

Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Fox River

Waterbody Segment at a Glance:

County: Clark
Nearby Cities: Wayland
Length of impairment: 12 miles
Pollutant: Manganese
Source: Natural



State map showing location of watershed

TMDL Priority Ranking: Low

Description of the Problem

Beneficial uses of Fox River

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption
- Boating and Canoeing
- Drinking Water Supply

Use that is impaired

- Drinking Water Supply

Standards that apply

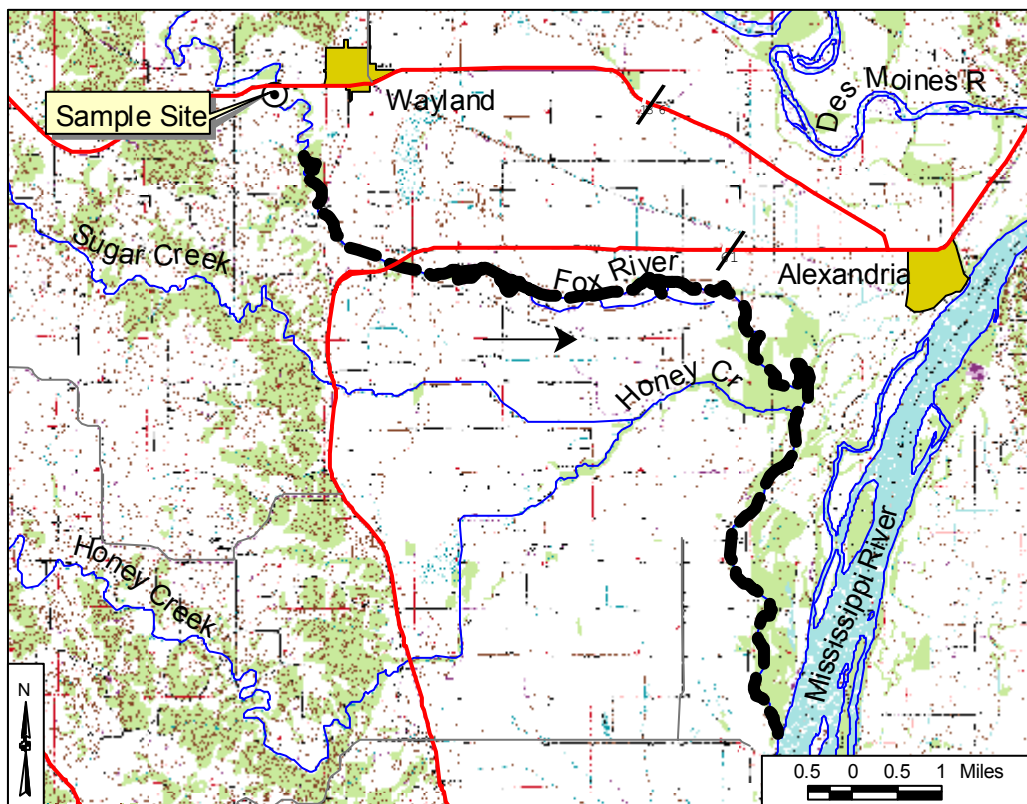
Missouri Water Quality Standards in 10 CSR 20-7.031 Table A allows 50 µg/L as the maximum amount of manganese allowed for Drinking Water Supply source waters. This is an aesthetic standard that seeks to protect a water supply against possible taste, odor and laundry staining problems caused by excessive amounts of manganese. Exceedence of this standard is not a threat to human health.

Background Information and Water Quality Data

Occasional monitoring of the Fox River near Wayland, Missouri over many years has shown an average level of dissolved manganese of 262 µg/L (micrograms per Liter or parts per billion, based on 29 individual samples). There are no known significant man-made sources of manganese in this watershed. The source of the manganese is believed to be natural weathering and erosion of earth materials (soils and subsoils) in this watershed. Several other streams in Northeastern Missouri also have elevated levels of dissolved manganese.

Manganese does not present any human health hazards, but is responsible for offensive tastes and appearances in drinking water. It can react with tannins in coffee, tea and in other beverages, producing a black sludge, which affects both taste and appearance. Manganese causes a brownish-black staining of laundry, porcelain, dishes, utensils and glassware. Soaps and detergents do not remove the stains, and use of chlorine bleach can intensify the stains. Manganese can build up in pipelines, pressure tanks, water heaters and water softeners and causes equipment problems and energy cost increases due to mineral deposits.

Impaired Segment of Fox River in Clark County, Missouri, Showing Location of Sampling Site



--- Impaired Segment → Direction of Flow

Site Name	Year	Month	Day	DMN*
Fox River near Wayland, MO	1970	10	19	110
Fox River near Wayland, MO	1970	11	12	30
Fox River near Wayland, MO	1970	12	7	110
Fox River near Wayland, MO	1971	1	26	420
Fox River near Wayland, MO	1971	2	10	350
Fox River near Wayland, MO	1971	3	1	80
Fox River near Wayland, MO	1971	4	26	230

Site Name	Year	Mo	Day	DMn
Fox River near Wayland, MO	1971	5	11	30
Fox River near Wayland, MO	1971	6	7	100
Fox River near Wayland, MO	1971	7	19	40
Fox River near Wayland, MO	1971	8	2	250
Fox River near Wayland, MO	1971	9	7	60
Fox River near Wayland, MO	1971	10	18	810
Fox River near Wayland, MO	1971	11	18	680
Fox River near Wayland, MO	1971	12	7	270
Fox River near Wayland, MO	1972	1	10	480
Fox River near Wayland, MO	1972	1	31	930
Fox River near Wayland, MO	1972	3	6	460
Fox River near Wayland, MO	1972	4	17	90
Fox River near Wayland, MO	1972	5	8	40
Fox River near Wayland, MO	1972	6	13	30
Fox River near Wayland, MO	1999	11	23	220
Fox River near Wayland, MO	1999	11	23	224
Fox River near Wayland, MO	2000	3	21	277
Fox River near Wayland, MO	2000	5	23	311
Fox River near Wayland, MO	2000	5	23	310
Fox River near Wayland, MO	2000	5	25	274
Fox River near Wayland, MO	2000	8	31	164
Fox River near Wayland, MO	2000	11	27	218
Fox River near Wayland, MO	2000	11	28	216
Fox River near Wayland, MO	2001	3	8	272
Fox River near Wayland, MO	2001	6	22	1.4
Fox River near Wayland, MO	2001	9	10	33.9
Fox River near Wayland, MO	2001	9	24	5.68
Fox River near Wayland, MO	2001	11	13	256
Fox River near Wayland, MO	2002	5	14	33.4
Fox River near Wayland, MO	2001	5	16	26
Fox River near Wayland, MO	2002	2	6	281
Fox River near Wayland, MO	2002	6	13	4.59
Mean				224
Frequency of exceedence of WQS				72%

Source: US Geological Survey 1970-72, Mo. DNR 1999-2002

***DMn = Dissolved Manganese**

For more information call or write:

Missouri Department of Natural Resources

Water Protection Program

P.O. Box 176, Jefferson City, MO 65102-0176

1-800-361-4827 or (573) 751-1300 office

(573) 526-5797 fax

Program Home Page: www.dnr.mo.gov/wpscd/wpcp/index.html